Small 'neural focus groups' predict anti-smoking ad success

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Brain scans of a small group of people can predict the actions of entire populations, according to a new study by researchers from the University of Michigan, the University of Oregon and the University of California at Los Angeles.

The findings are relevant to political advertising, commercial market research and public health campaigns, and broaden the use of brain imaging from a diagnostic to a predictive tool.

As opposed to the wisdom of the crowd, the study suggests that the neurological reactions of a few—reactions that people are not even consciously aware of and that differ from the opinions they express—can predict the responses of many other people to ad campaigns promoting specific behaviors.

"Brain responses to ads forecasted the ads' success when other predictors failed," said Emily Falk, director of the U-M Communication Neuroscience Lab and lead author of the study, which appears online in *Psychological Science*.

"Our findings could help design better health campaigns. This is a key step in reducing the number of smokers and reducing deaths from cancer, heart disease and other smoking-related illnesses."

The findings, she said, might also help produce more effective political campaign ads and provide a neural roadmap to why some videos, fashions, behaviors and ideas go viral, moving from one person to many thousands of others via social media.

Falk conducted the study with Elliot Berkman of Oregon and Matthew Lieberman of UCLA. The researchers were supported by the National Science Foundation and the National Institutes of Health.

For the study, the researchers recruited 31 heavy smokers with a strong desire to quit, and examined their neural responses to three anti-smoking ad campaigns, using functional magnetic resonance imaging (fMRI). All of the ads directly urged viewers to call the National Cancer Institute's tobacco quit-line (1-800-QUIT-NOW).

Following the fMRI, participants rated the effectiveness of the ads they had just viewed in a variety of ways. The researchers compared their brain scans to their reports on the ads' effectiveness.

To obtain population-level measures, the researchers compared the number of calls to the tobacco quit-line in the month before and after each media campaign first aired in three different media markets.

When asked what they thought of the ads, participants rated Campaign B

the highest, followed by Campaign A and then Campaign C. Industry experts familiar with the campaigns also disliked Campaign C. The three campaigns used very different strategies. Raters found Campaign C annoying and guessed that it would be ineffective. By contrast, Campaigns A and B resonated with participants, but in the end were less effective in actually driving calls to 1-800-QUIT-NOW.

But brain scans, which focused on the medial pre-frontal cortex, an area of the brain identified in earlier studies as linked to positive responses to persuasive messages, showed a completely different order, with Campaign C eliciting the strongest response.

At the population level, each ad campaign led to increases in call volume to the quit-smoking line, compared with a no-media control month before the launch of each campaign. The increases ranged from 2.8 times to 32 times higher than the control month, and the researchers found that Campaign C led to the highest increases, followed by Campaign B and lastly Campaign A—just the opposite of the participants' guesses but precisely the same as their brain scans showed.

"It seems that the brain is picking up on important features of these ads, but we're not sure what these features are yet," said Falk, assistant professor of communication studies and a faculty associate at the U-M Institute for Social Research. "We're doing follow up studies now to translate what the brain is telling us about how to design better messages."

This study broadens the use of neuroscience data from predicting individual behavior to predicting the responses of much larger groups of people.

"It seems that the brain can predict the responses of entire populations to ad campaigns," Falk said. "The behavior of people whose brains are

never examined may be inferred from the brains of a small 'neural focus group.'

"These findings could help us improve the success of campaigns. In the long run, we hope this will help us fight cancer and other preventable diseases."

More information: Falk's Communications Neuroscience Lab: cn.isr.umich.edu/index.html

Berkman's Social and Affective Neuroscience Lab: sanlab.uoregon.edu/SAN_Lab.html

Lieberman's Social Cognitive Neuroscience Lab: www.scn.ucla.edu

Provided by University of Michigan

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